

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NEW GENERA AND SPECIES OF CRINOIDS.

BY AUSTIN H. CLARK.

Through the kindness of my friend Dr. Th. Mortensen, I have been enabled to examine the large and exceedingly interesting collection of recent erinoids belonging to the University of Copenhagen, Denmark. Aside from its importance in shedding considerable light upon the species inhabiting the Indo-Pacific-Japanese region, and showing, from the large number of forms taken at a single locality (Singapore), how very rich this region really is, the collection is of great interest in including many specimens bearing the MS. names of Professor C. F. Lütken, names which have been more or less of a puzzle to students of the group, for, although many of them have crept into the literature, and several of them have been identified by Dr. P. H. Carpenter and Dr. C. Hartlaub, there still remain a number which have never been identified with any described species, and which were never diagnosed by Professor Lütken.

Dr. Carpenter and Dr. Hartlaub were apparently unaware that any of these names had been published; but in the lists of crinoids given in the catalogue of the Museum Godeffroy in Hamburg most of these names occur as *nomina nuda*, with a locality attached. Unfortunately, but few volumes of this catalogue are to be found in America; I have been able to consult Vol. IV, and part of Vol. V; Mr. W. K. Fisher has very kindly furnished me with the data from the remainder of Vol. V. Dr. Mortensen wrote to Professor Pfeffer at Hamburg for information in regard to the other volumes, which he courteously supplied, so that I believe we are now correctly informed as to the place of publication, and the identification, of all of Professor Lütken's nominal species.

Mainly from the results of the investigations carried on by the United States Fisheries steamer *Albatross*, and by Mr. Alan Owston, of Yokohama, in his yacht the *Golden Hind*, sixty-two comatulids are already known from southern Japan, and eight more from the northern part of that country, making seventy in all. In spite of this seemingly long list, I recently hazarded a remark that there probably were yet many crinoids in those waters of which we had no knowledge; and the occurrence, in this collection, of six additional species from Japan shows that my suspicions were well founded.

The species of *Himerometra* described, excepting *H. grandis*, all belong to that group of the genus comprising such species as *H. milberti*, *H. anceps*, and *H. variipinna*, in which the rays are in apposition, often more or less flattened laterally, and the middle and distal brachials are exceedingly short and oblong.

In the following diagnoses the number of the cirri is given in Roman numerals, the number of their component joints (exclusive of the terminal claw) in Arabic; thus (under *Comanthus decameros*) "Cirri XL, 16-17" signifies that the species has forty cirri, each of sixteen or seventeen joints. In designating the pinnules, the distichal (II Br) pinnule is represented as P_{II} , the palmar pinnule as P_p , the post-palmar pinnule as P_{pp} ; pinnules of the outer side of the arm are referred to by Arabic numerals; thus P_1 is the pinnule of the second brachial, P_2 that of the fifth, P_3 that of the seventh, etc.; italics denote pinnules on the inner side of the arm, P_a being the pinnule of the fourth brachial, P_b that of the sixth, P_c that of the eighth, etc.

I have, as before, followed Dr. F. A. Bather's suggestion in regard to brachials united by syzygy, considering them as two separate brachials, not as a single one "with a syzygy," as was done by Carpenter and Hartlaub.

Detailed discussion of the species herein described is reserved for the completed report on the collection, now in preparation.

FAMILY COMASTERIDÆ.

GENUS COMANTHUS A. H. Clark.

Comanthus intricata (Lütken MS.) sp. nov.

Actinometra intricata Lütken MS. (part).*

* Not *Actinometra intricata* Lütken, Mus. Godefr. Cat. V, p. 190, 1874, and following authors, which is the *Comatula rotalaria* of Lamarek, 1816, of which the *Alecto parvicirra* of Müller, 1841, is a synonym.

Centro-dorsal a very thin pentagonal plate, scarcely raised above the surface of the radials; three of the basal joints of a single cirrus remain.

Arm bases united to, and including, the first distichal, but well separated from that point onward; distichals, palmars, and post-palmars (five of the last are present) 4 (3+4); a single distichal series and three palmar series 2. Forty-five arms 195mm. long, of short triangular or wedge-shaped joints, over twice as broad as long, with everted distal ends.

Lower pinnules not especially long or stout; P_D 23mm.—25mm. long with about sixty joints; P_P 20mm. long; P_1 17mm. long; P_2 10mm. long.

Color (in spirits).—Dark brown.

Type locality.—Bowen, Queensland.

Type, in the collection of the University of Copenhagen.

Comanthus decameros sp. nov.

Centro-dorsal discoidal, bearing numerous marginal cirri in roughly three irregular and crowded, more or less alternating rows.

Cirri XI, 16–17, 20mm. long; first joint very short, second slightly longer than broad to about twice as long as broad, the third to the sixth two and one-half to three times as long as broad, then decreasing in length, the last two joints being squarish; opposing spine represented by a low tubercle; terminal claw about as long as penultimate joint, moderately stout, and moderately curved.

Ends of basal rays very prominent in the angles of the calyx; radials concealed; first costals short, oblong, widely free laterally; costal axillaries broadly pentagonal, about twice as broad as long. Ten arms 125mm. long; first seven or eight brachials slightly wedge-shaped, then triangular, about as long as broad; in the outer portion of the arms the brachials have projecting and finely spinous distal ends. Syzygies occur between the third and fourth brachials, again between the thirteenth and fourteenth to seventeenth and eighteenth (usually nearer the former), and distally at intervals of three to five (usually three or four) oblique muscular articulations. The arms are rugged and tubercular basally, but are not enlarged or swollen.

P_1 23mm., P_2 20mm., P_3 15mm., and P_4 10mm. in length, the last with a genital gland; the following pinnules increase gradually in length, reaching 22mm. distally. The distal dorsal end of the proximal pinnule joints of the lower four or five pinnule pairs is prominent, giving these pinnules a serrate dorsal outline basally; the distal ends of all the pinnule joints are projecting and finely spinous. The teeth on the terminal comb on the proximal pinnules are low and rounded; the comb is not found after P_3 .

Color (in spirits).—Brownish yellow, the cirri lighter, the perisome darker.

Type locality.—32° 22' N. lat., 128° 42' E. long., off the Goto Islands, near Nagasaki, Japan; 170 fathoms.

Type, in the collection of the University of Copenhagen.

The only species with which this could be confused is *C. cumingii* of the East Indies; but the large number of long cirri with comparatively numer-

ous joints, and the absence of the swollen condition in the basal portion of the arms distinguish it at once.

FAMILY HIMEROMETRIDÆ.

GENUS HIMEROMETRA A. H. Clark.

Himerometra grandis sp. nov.

Centro-dorsal thick-discoidal, a rather small polar area bare; cirrus sockets arranged in two or three crowded marginal rows.

Cirri xxiv, 31-38 (usually 32-36), 30mm. long, rather stout; the eighth to the tenth joints are squarish, the remainder not so long as broad; from the eleventh onward sharp carinations are developed which may take the form of small spines; opposing spine centrally or subterminally situated, but short, not reaching one-half the diameter of the penultimate joint in height; terminal claw somewhat longer than the penultimate joint, rather abruptly curved.

Rays and division series as in *H. regalis*, to which this species is most closely related, but post-palmars are developed exteriorly. Forty-five arms 110mm. long, resembling those of *H. regalis*.

Proximal pinnules more slender than those of *H. regalis*; P_1 about 10mm. long, with twenty-six to thirty joints, slender and flagellate; P_2 and P_3 20mm. long, slender, though stiffer than P_1 with, in P_2 twenty-six to thirty, in P_3 twenty to twenty-five joints, the third squarish, after the fifth rather over twice as long as broad; P_4 9mm. long, more slender than P_1 ; distal pinnules 10mm. long.

Color (in spirits).—Reddish brown.

Type locality.—33° 10' N. lat., 129° 18' E. long., Hirado Straits, Japan; 40 fathoms.

Type, in the collection of the University of Copenhagen.

Himerometra molleri (Lütken MS.) sp. nov.

Alecto molleri Lütken MS.

Centro-dorsal thick-discoidal, with a moderately large flat polar area, the marginal cirri in one and a partial second irregular row.

Cirri xvi, 34-37, 20mm. long, moderately stout, all the joints subequal, about twice as broad as long, very slightly shorter basally, very slightly longer distally, the sixth and following bearing small sharp-pointed median dorsal spines; opposing spine rising from entire dorsal surface of penultimate joint, blunt, not reaching in height one-third the diameter of that joint, the apex median or sub-terminal in position; terminal claw longer than penultimate joint, stout, slightly curved.

Costals and lower brachials deep, in close apposition, laterally flattened ("wall-sided"); brachials as in *H. milberti*; synarthrial tubercles prominent, but small; ten arms about 115mm. long.

P_1 10mm. long, slender, flagellate, with eighteen joints; P_2 15mm. long, much stouter, with twenty-one joints, the first two not quite so long as

broad, the third squarish, the remainder half again as long as broad; P_3 11mm. long, resembling P_2 , though slightly more slender; P_4 9mm. long, slightly more slender than P_3 ; P_5 and following pinnules 9mm. long, very slender, and flagellate distally; the distal pinnules are 12mm. long.

Type locality.—"Indian Ocean."

Type, in the collection of the University of Copenhagen. Another specimen in the same collection was taken in the Straits of Malacca.

Himerometra schlegelii (Lütken MS.) sp. nov.

Alecto schlegelii Lütken MS.

Centro-dorsal thick-discoidal, the polar area thickly covered with small low flattened tubercles, bearing two closely crowded alternating rows of cirrus sockets.

Cirri xv, 26-35 (usually 30-35), about 20mm. long; first joint short, second about twice as broad as long, third slightly longer, fourth squarish; following to the twelfth or fourteenth squarish (some of the more proximal occasionally slightly longer than broad), the length then very gradually diminishing, so that the terminal joints are about one third broader than long; from the twelfth joint onward comparatively long sharp dorsal spines are developed; opposing spine considerably longer than the spines on the few preceding joints, about equal to the diameter of the penultimate joint in length, and rather slender, abruptly curved basally, but nearly straight in its distal half.

Radials projecting slightly beyond the edge of the centro-dorsal; first costals oblong, three or four times as broad as long, the lateral edges swollen into an elongate tubercle, and in close apposition; costal axillaries broadly pentagonal, about twice as broad as long, in lateral apposition; distichals (when present) 4 (3+4). Ten to thirteen arms about 70mm. long; first brachial short, slightly longer outwardly than inwardly, interiorly united for about two-thirds of their length; second brachial somewhat larger and irregularly quadrate, rising to a rather prominent tubercle with the first brachial, resembling that between the costals; third and fourth brachials (syzygial pair) about as long as the second brachial (three times as broad as long), oblong; following six brachials oblong, about three times as broad as long, then becoming wedge-shaped or almost triangular, gradually becoming oblong again and decreasing in length, the joints in the distal half of the arm being extremely short and discoidal, with projecting distal edges. Syzygies occur usually between the third and fourth (once between the fourth and fifth) brachials, again between the eleventh and twelfth to seventeenth and eighteenth (with occasionally an additional one between the ninth and tenth), and distally, in one specimen at intervals of nine or ten, in the other of eleven to twenty-five oblique muscular articulations.

The costals and first two brachials are in close apposition, and are laterally flattened.

P_1 about 5mm. long, comparatively slender, tapering evenly from

the base to the delicate tip, with about eighteen joints, all of which are practically squarish; P_2 about 7.5mm. long, slightly stouter than P_1 , but slender and delicate distally, with about eighteen joints of which the first two are not quite so long as broad, the next two are squarish, the remainder gradually becoming elongated and about twice as long as broad distally; P_3 about $\frac{1}{2}$ mm. longer than P_2 , stouter and stiffer, though the joints are in the same number and proportion; P_4 resembling P_3 , but shorter and somewhat less stout, with about twelve joints, of which the first two or three are not quite so long as broad, the following squarish, becoming rather longer than broad distally; distally the pinnules slowly increase in length and become more slender; the distal pinnules are 6mm. long, moderately slender, with about twenty joints, the first not so long as broad, the second squarish, the following becoming gradually longer, reaching a length of about twice the breadth distally.

Color (in spirits).—Dull flesh-color, the perisome brown.

Type locality.—Japan.

Type, in the collection of the University of Copenhagen.

Himerometra producta sp. nov.

Centro-dorsal low-hemispherical, almost discoidal, bearing cirri in two crowded alternating rows; polar area moderate in size, with a raised and roughened center, surrounded by one or two rows of more or less obliterated cirrus sockets.

Cirri XVI, 24–26, 15mm. long, slender; first three joints very short, fourth not quite twice as broad as long, fifth to eighth half again as long as broad, then decreasing in length, after the tenth or eleventh being about as long as broad; ninth and following joints sharply carinate, on some of the cirri bearing small sub-terminal dorsal spines; opposing spine terminal, rather large, arising from the whole dorsal surface of the penultimate joint, its anterior edge being a continuation in a straight line of the distal edge of the penultimate joint; terminal claw somewhat longer than the penultimate joint, rather slender, moderately curved.

Radials short, their dorsal sides parallel to the dorso ventral axis of the animal; first costals very short, four or five times as broad as long; costal axillaries broadly pentagonal, rather over twice as broad as long, rising to a slight, smooth, rounded tubercle with the first costal; three distichal series present in the type, all 4 (3+4). Thirteen arms 50mm. long; first two brachials wedge-shaped; next six oblong, three or four times as broad as long, then short wedge-shaped, becoming oblong again and very short after about the middle of the arm.

P_1 slender, flagellate distally, 5mm. long, with seventeen to twenty joints, the first not so long as broad, the second to the fifth squarish, then becoming elongated, and about twice as long as broad distally; the first seven or eight joints somewhat carinate; P_2 similar to P_1 , 7mm. long; the distal joints are somewhat longer, and the carination of the lower joints is more marked; in addition to the dorsal carination there is a lateral carination (only slightly marked on P_1) especially evident toward

the end of each joint; P_3 comparatively stout and stiff, 8mm. long, with twelve joints, the first not quite so long as broad, the second squarish, the following becoming elongated, and about three times as long as broad distally; the second to the fifth joints have a sharp dorsal keel, and from the third onward the median portion of the exterior surface of the distal end of the joints is produced, forming a moderate "lateral process," as described by Carpenter in *H. variipinna*; this is repeated, though not so strongly, on the opposite side of the pinnule; in the distal portion the entire distal end of the joints is somewhat overlapping; P_4 and following pinnules 4mm. long, with twelve joints, increasing in length to the third, which is squarish, then increasing distally to about three times as long as broad, the three or four terminal joints shorter again. The distal pinnules are 6mm. long.

Color (in spirits).—Flesh color, clouded with violet.

Type locality.—Singapore.

Type, in the collection of the University of Copenhagen.

Himerometra ensifer sp. nov.

Centro-dorsal thick-discoidal, the cirrus sockets arranged in two closely crowded, irregular, more or less alternating rows.

Cirri xv–xx, 30, 20mm.–25mm. long; first joint very short, the following gradually increasing to the sixth, which is squarish; next five or six joints slightly longer than broad, the length then very gradually decreasing, the distal joints being about one-third broader than long; tenth and following joints with well developed dorsal spines; opposing spine and terminal claw as in *H. schlegelii*.

Disk completely covered with a pavement of small plates.

Arms as in *H. discoidea*; but the synarthrial tubercles are produced extravagantly, as in *Perometra diomedex*, giving the animal a very characteristic appearance.

All the proximal pinnules have squarish joints; P_1 is 7mm. long, very slender, with 20 joints; P_2 is 7mm. long, stouter than P_1 , with 17 joints; P_3 is similar to P_2 , but is only 5mm. long, with 16 joints; P_4 and the following pinnules are less stout than P_2 and P_3 (though stouter than P_1), 5mm. long, with 13 joints.

The ten arms are 80mm. long.

Color (in spirits).—Nearly white to dark brown, the perisome darker; the cirri of the lighter specimens are usually purplish.

Type locality.—Singapore.

Type, in the collection of the University of Copenhagen.

GENUS CYLLOMETRA A. II. Clark.

Cyllometra anomala sp. nov.

Centro-dorsal a thick disk with a broad, slightly concave, polar area, the cirrus sockets arranged in two irregular, crowded, more or less alternating rows.

Cirri xxx, 21–28 (usually about 25), 10mm.–12mm. long; first six or eight joints not so long as broad, the remainder squarish; dorsal surface of the joints smooth, rarely in the terminal two or three with a slight trace of a minute central tubercle; opposing spine prominent, though small, reaching to not more than about one-third the diameter of the penultimate joint in length; terminal claw rather longer than the penultimate joint, moderately curved.

Radials concealed by the centro-dorsal; first costals slightly trapezoidal, very short, four times, or rather more, as broad as long; costal axillaries about half again as broad as long, and, like the first costals, free laterally; seven distichal series are present, one of 2, the remainder of 4 joints with a synarthry between the first and second and third and fourth;* the second distichal, except when axillary, always bears a pinnule; there are three palmar series of 2, of which the second is not an axillary, these being, therefore, strictly homologous with the distichal series in *Uintacrinus*, and in the abnormal specimen of *Heliometra tanneri* which I described not long ago.† Seventeen arms about 55mm. long, resembling those of *C. manca* or *C. albopurpurea*; the pinnule of the fourth (epizygal) brachial is present on about half of the arms.

Color (in spirits).—White, the cirri with narrow bands of light purple, the polar area of the centro-dorsal deep purple, the division series and discoidal lower brachials with a median line of purple, the remainder of the arms crossed by purple bands about equal to one brachial in width, separated by white bands of the same width.

Type locality.—Off Nipon, Japan.

Type, in the collection of the University of Copenhagen.

GENUS OLIGOMETRA A. H. Clark.

***Oligometra pulchella* sp. nov.**

This is a delicate and rather slender species, similar in general build to *O. gracilicirra* from the Philippine Islands, though the cirri are proportionately only one-half as long, with about half as many joints.

Centro-dorsal discoidal, the large polar area circular, flat, and unmarked; cirrus sockets in a single marginal row.

Cirri xiv, 16–23 (usually about 18), 7mm. long, comparatively slender; first joint short, the following gradually increasing in length to the sixth, which, with those following, is squarish; fourth and following joints with a low transverse ridge extending entirely across the flattened dorsal surface of the joints, in the earlier joints subterminal in position, at about the eighth becoming median; this ridge is finely spinous, and appears as a very small dorsal spine in lateral view; opposing spine delicate, median

* This is an entirely new type of arm structure; in all other cases where the distichals are four in number, the two outer are united by syzygy. I have already pointed out, however (Proc. U. S. Nat. Mus., xxxv, p. 127, 1908), that this syzygy was in reality occupying the position of a synarthry, though I did not then know of any species with this more primitive type of arm-structure.

† Proc. U. S. Nat. Mus., xxxiv, p. 267, fig. 4.

in position, standing out vertically from the dorsal surface of the penultimate joint, not reaching quite half the diameter of that joint in length; terminal claw rather longer than the penultimate joint, stout, and strongly curved.

Radials even with the edge of the centro-dorsal; first costals short, four or five times as broad as their median length, not united, the lateral edges straight; costal axillaries triangular, about twice as broad as long, rising to a rather prominent median tubercle with the first costals. Ten slender arms about 60mm. long; first brachial short, wedge-shaped, about twice as long outwardly as inwardly, inwardly united for about the proximal half, the distal free edges diverging at rather more than a right angle; second brachial similar in shape, but slightly larger, rising in the proximal median line to a moderate tubercle with the first; third and fourth brachials (syzygial pair) slightly longer inwardly than outwardly, about twice as broad as the longer lateral length; four following brachials oblong, rather over three times as broad as long; second syzygial pair wedge-shaped; following brachials triangular, not so long as broad, later becoming wedge-shaped, broader than long, and, in the terminal portion of the arm, as long as, or even longer than, broad. After about the tenth the brachials have rather strongly produced and overlapping, finely serrate, distal edges, giving the arm a characteristically rough appearance; this begins to die away in the outer half of the arm, and disappears in the distal third. Syzygies occur between the third and fourth brachials, again between the ninth and tenth (rarely the tenth and eleventh), fourteenth and fifteenth to seventeenth and eighteenth, and distally at intervals of five to eight (usually five) oblique muscular articulations.

P_1 about 4mm. long, moderately slender, tapering evenly from the base to the tip, with sixteen joints, of which the first two or three are not quite so long as broad, the remainder squarish; in its outer half the pinnule becomes styliform and then flattened; the last ten joints have their distal dorsal ends much produced, so that the dorsal outline of the distal third (or rather more) of the pinnule is very strongly serrate; P_2 about 6mm. long, much stouter than P_1 , much the largest pinnule on the arm, with about nineteen joints, the first two not quite so long as broad, the remainder approximately squarish; after the third joint the pinnule gradually becomes sharply styliform, the distal dorsal end of the joints projecting in a rounded, laterally flattened tubercle, which soon becomes very prominent; the base of this tubercle gradually involves more and more of the dorsal side of the joints, in the last ten or twelve arising from the whole dorsal surface, so that the terminal half of the pinnule, like the distal third of the first, is deeply scalloped in lateral view; P_3 about as large basally as P_1 , but shorter (3.5mm.) with twelve joints, the first three not quite so long as broad, the fourth squarish, the remainder becoming gradually longer than broad, in the terminal portion about twice as long as broad; beyond the third joint the pinnule becomes rounded-triangular, and the distal dorsal end of the joints is prominent, though not excessively produced; P_4 slightly smaller and more delicate with about the same number of joints, which are proportionately longer

distally; following pinnules similar, but gradually becoming longer and more slender, with longer joints; the rounded-triangular condition of the distal portion of the pinnules is traceable to about the end of the proximal third of the arm; distal pinnules about 5.5mm. long, exceedingly slender, with about twenty joints, the first trapezoidal, about twice as broad as long, the second trapezoidal, about as long as broad proximally, the third slightly longer than broad, the remainder elongated with swollen articulations, distally three times as long as broad or even somewhat longer.

Color (in spirits).—White, with small bands and patches of light brown on the arms, the distal half of the cirri becoming brownish; or, white, similarly marked with deep violet; or, entirely deep purple, sometimes with the two proximal pinnule pairs white; occasionally, brown; small specimens are yellow.

Type locality.—Singapore.

Type, in the collection of the University of Copenhagen.

***Oligometra imbricata* sp. nov.**

Antedon cupuliferus var. Lütken MS.

Centro-dorsal rather large, discoidal, with a large concave polar area, the cirrus sockets in a single marginal row.

Cirri XVI-XVII, 23-28 (usually 24-26), about 12mm. long; all the joints but the terminal five or six (which are squarish) are broader than long, the basal very much so; they have prominent distal dorsal ends, showing a tendency to rise into a low transverse ridge; the dorsal surface of the joints is flattened; in the outer part of the cirrus a more distinct transverse ridge is found, which gradually becomes narrower, at the same time gaining in height, so that the last six or seven joints have minute median dorsal spines; opposing spine prominent, but slender, not reaching quite the diameter of the penultimate joint in length; terminal claw longer than the penultimate joint, strongly curved basally, but becoming nearly straight distally.

Radials even with the centro-dorsal; the costals and brachials have about the same proportions as those of *O. pulchella*, and the synarthrial tubercles are about as prominent as in that species, but the brachials have very strongly produced and overlapping distal edges.

P_2 much longer and stouter than P_1 ; the following pinnules decrease rapidly in size, remain uniform for some time, then slowly increase distally; the proximal joints of the lower pinnules may be more or less carinate, and the distal joints expand somewhat from the proximal to the distal end, giving the edge of the pinnule a serrated outline.

Color (in spirits).—Grayish brown, the perisome darker.

Type locality.—?Tranquebar, India.

Type, in the collection of the University of Copenhagen.

FAMILY TROPIOMETRIDÆ.

GENUS ASTEROMETRA A. H. Clark.

Asterometra lepida sp. nov.

Centro-dorsal rounded-conical, about as long as broad at the base, the cirrus sockets arranged in ten crowded, but regular, columns, of usually two each, two columns to each radial area.

Cirri lacking, but, as the centro-dorsal and the cirrus sockets are proportionately smaller than in the three other species of the genus, it may be inferred that the cirri are either shorter, or more slender, or both.

Disk lacking; brachial and pinnule ambulaera protected by large covering plates as in the other species of the genus.

Radials short, about four times as broad as long, with a prominent tubercle in the median line; first costals oblong, approximately three times as broad as long; costal axillaries broadly pentagonal, not quite twice as broad as long; distichals 2, as in *A. micropoda* and *A. anthus*. Eleven arms (in the type) 70mm. long, resembling those of the other species of the genus, but somewhat more slender basally.

P_1 5.5mm. long, styliform, with ten joints, the first not quite so long as broad, the second slightly longer than broad, the third and following slightly longer than the second; P_2 6.5mm. long, with twelve joints, resembling P_1 , and of the same diameter basally though, on account of its greater length, tapering more gradually; P_3 similar to P_2 , with the same number of joints, but somewhat stouter; following pinnules gradually increasing in length and in number of joints, the joints in the terminal portion becoming proportionately more elongated; P_{10} is 9mm. long, and the distal pinnules are 12mm. long, with fifteen to seventeen joints, of which the first is about twice as broad as long, the second is squarish, the third about one-third longer than broad, and the following increasing very gradually in length, being distally about three times as long as broad.

Color (in spirits).—Brownish white.

Type locality.—Straits of Formosa; 35 fathoms.

Type, in the collection of the University of Copenhagen.

FAMILY ANTEDONIDÆ.

Mastigometra gen. nov.

Genotype.—*Mastigometra flagellifera* sp. nov.

Centro-dorsal hemispherical; cirri resembling those of *Antedon*, but much more numerous; arm structure as in *Antedon*; lower pinnules greatly elongated and exceedingly slender distally, P_1 twice as long as the cirri, P_3 and following pinnules about as long as the cirri.

Mastigometra flagellifera (Lütken MS.) sp. nov.

Centro-dorsal hemispherical, a rather small convex polar area bare.

Cirri 1-1.333, 15, about 12mm. long; first two joints short, about twice as broad as long; third about one-third again as long as broad;

fourth and fifth the longest, about half again as long as broad; following joints decreasing gradually in length to the third from the end which is about one-third longer than broad, the last two being about half again as long as broad; opposing spine represented by a very small terminally situated tubercle, which may, however, be quite absent; fourth and fifth joints very slightly "dice-box shaped," but the remainder with almost straight edges; there is no indication of any dorsal spines. Up to about the sixth joint the cirri are rounded in cross section; from that point onward they are somewhat compressed, and appear somewhat broader in lateral view.

Radials even with the edge of the centro-dorsal; first costals very short, about five times as broad as long in the median line, narrowing rapidly anteriorly, not in apposition basally; costal axillaries triangular, about one and one-half times as broad as long, as broad basally as the distal end of the radials, and consequently overhanging on each side the narrow anterior end of the first costals. Ten arms probably about 120mm. long; first brachial very obliquely wedge-shaped or almost triangular, much longer exteriorly than interiorly, interiorly just in apposition basally, the free interior edges diverging practically in a straight line; second brachial irregularly quadrate, about as long as the outer edge of the first; first two brachials and second costal with a somewhat produced and thickened border; synarthrial articulation between the first two brachials and the costals rising to a moderate tubercle; third and fourth brachials (syzygial pair) about half again as long interiorly as exteriorly, and about one and one-half times the greater length in width; next four brachials oblong, about twice as broad as long, then becoming wedge-shaped, and after the second syzygy triangular, about twice as broad as long, later becoming wedge-shaped again and somewhat longer; distal portion of arms lacking; syzygies occur between the third and fourth, ninth and tenth, and fourteenth and fifteenth to sixteenth and seventeenth brachials, and distally at intervals of three to seven (usually three) oblique muscular articulations. The distal ends of the brachials after the first syzygy are rather prominent.

P_1 25mm. long, moderately thick at the base but gradually tapering and in the distal half very slender and flagellate, composed of forty joints, the first about as long as broad, then gradually increasing in length, the tenth and following being about half again as long as broad; first five joints slightly constricted centrally; P_2 16mm. long, similar to the first, but not so stout basally, with about thirty-five joints; P_3 10mm. or 12mm. long, about as stout basally as the second, but less slender and flagellate distally, tapering more evenly from the base to the tip, with twenty joints, resembling those of the first and second; it bears a long genital gland; P_4 and following pinnules similar; the genital gland disappears about P_{12} , after which the pinnules are about 15mm. long, exceedingly slender, with about thirty-five joints, the first short and crescentic, the second irregularly quadrate, about as long as its distal diameter, the third squarish, the remainder gradually increasing in length, being about twice as long as broad in the distal half.

Color (in spirits).—Brownish yellow.

Type, in the collection of the University of Copenhagen, from an unknown locality.

GENUS HELIOMETRA A. H. Clark.

Heliometra glacialis biarticulata sub. sp. nov.

Similar to typical *H. glacialis* from Labrador and Greenland, but the proximal joints of the lower pinnules are more strongly carinate, the cirri are more noticeably spiny, the brachials rather more overlapping, and the distal intersyzygial interval is three instead of four oblique muscular articulations.

The longest cirri are about 50mm long, with 60–70 joints; the arms are somewhat over 150mm. long.

P₁ 27mm. long, with sixty short joints, the distal half rather prominently serrate; P₂ similar, and of the same length; P₃ 25mm. long, all the joints proportionately slightly longer, most of them being about half again as long as wide, and the distal portion not serrate; P₄ 17mm. long, with twenty-six joints, the first six squarish, then gradually becoming elongate, and about twice as long as broad distally; this pinnule is stouter than the preceding, and, while tapering evenly to the tip, is not flagellate.

Color (in spirits).—Light yellow.

Type locality.—?Straits of Tsugaru, between Hokkaido and Honshu, Japan.

Type, in the collection of the University of Copenhagen.

